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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,023	04/23/2004	Jun Tsutsumi	025720-00033	7586

7590

09/08/2005

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EXAMINER

SUMMONS, BARBARA

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/830,023

Applicant(s)

TSUTSUMI ET AL.

Examiner

Barbara Summons

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2004 (pre-amendment).
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/23/04.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

EX PARTE QUAYLE ACTION/COMMENTS

Comments on Information Disclosure Statement

1. The information disclosure statement filed 4/23/04 included one reference US 2002-2109561 to Osamu et al. This reference could not be found. However, a reference with the same publication date and one numeral different 2002-01909561 to Iwamoto et al. was found. This is the reference that was considered as indicated by the changes the Examiner made on the form PTO-1449. If Applicants intended to cite a different reference, then Applicants should inform the Examiner of the alternate reference in reply to this Office action.

Ex Parte Quayle

2. This application is in condition for allowance except for the following formal matters:

In the claims:

It should be noted that although the claims can be understood in light of the specification, the equations do not make sense unless units are provided for the film thickness h and the frequencies f_1 and f_2 (see the specification at page 14, lines 17-26). Also note, it is assumed that the "specific gravity a_k of the metal layer... with respect to aluminum" as recited in claim 3, lines 12-13, is a ratio of the specific gravity of the metal layer to the specific gravity of aluminum so that it has no units.

Therefore, in claim 1, on line 8, " h " should be followed by -- in meters -- (ibid.);

In claim 1, on line 9, " f_1 " should be followed by -- in Hertz --; and

In claim 1, on line 10, " f_2 " should be followed by -- in Hertz --.

Similarly, in claim 3, on line 10, " h_k " should be followed by -- in meters --;

In claim 3, on line 12, " f_1 " should be followed by -- in Hertz --; and

In claim 3, on line 13, " f_2 " should be followed by -- in Hertz --.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.

Allowable Subject Matter

3. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record does not disclose or fairly suggest a duplexer having "a ladder filter and a multimode filter that are formed on an identical surface of a...substrate (see claims 1 and 3, lines 2-3), each of the filters having electrodes with "an identical layer structure with an equal film thickness" (lines 4-5), and wherein the film thickness, center frequencies of the filters (claim 1), and specific gravity of the

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material of the layers (claim 3) meet the recited equations. The closest prior art of record is discussed below.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ueda et al. U.S. 5,874,869 appears to be the closest prior art of record, and it discloses a dual band filter (Fig. 16) that functions as a duplexer to pass frequencies in the 800-900MHz band and the 1.7-1.9GHz band (see col. 18, lines 44-49). This duplexer comprises: a ladder filter for the higher frequency band (col. 17, lines 28-32) with f_1 equal to about 1.85×10^9 Hz (see Fig. 18); a multimode filter for the lower frequency band (col. 17, lines 18-24) with f_2 equal to about 0.95×10^9 Hz (see Fig. 17); and both filters have aluminum electrodes with an electrode thickness of 200nm equivalent to 200×10^{-9} m (see col. 18, lines 66-67 and col. 19, lines 12-15 and 22-25). This yields a value of $h \times f_1 = 1.85 \times 200 = 370$ which is in the recited range of the first equation, but $h \times f_2 = 0.95 \times 200 = 190$ which is not in the recited range of the second equation.

Iwamoto et al. U.S. 2004/0155730 (see e.g. Figs. 4, 6 and 12B) and Inoue et al. U.S. 2004/0075511 (see the cover figure) each disclose a ladder filter and a multimode filter on the same substrate, but they do not discuss the thickness of the electrodes of the two filters.

Kearns U.S. 2003/0214369 (see Fig. 5) discloses a duplexer with a ladder filter and a multimode filter, but although the filters are in the same package (see Fig. 9), they

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are apparently not on the same substrate since the RX filter is interchangeable for balanced or unbalance terminals as needed (see e.g. section [0034]), and the thickness of the electrodes of the two filters is not discussed.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara Summons whose telephone number is (571) 272-1771. The examiner can normally be reached on M-Th, M-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bob Pascal can be reached on (571) 271-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

bs
September 4, 2005



**BARBARA SUMMONS
PRIMARY EXAMINER**